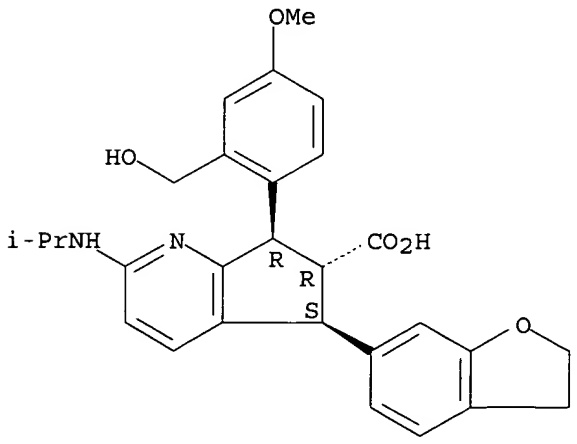
CAS online 11-1-03

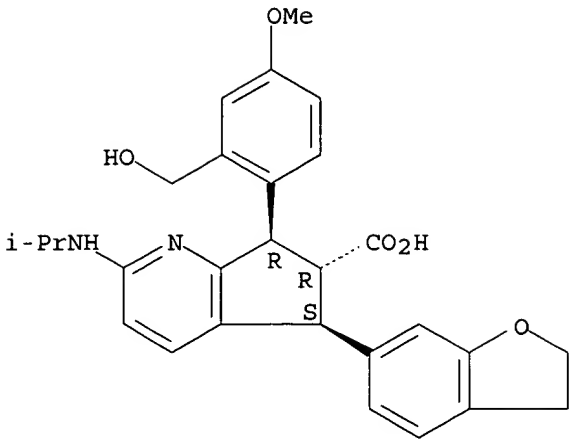
L3 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2003 ACS on STN
AN 2002:620024 CAPLUS
DN 138:153416
TI Asymmetric synthesis of a selective endothelin A receptor antagonist
AU Kato, Yoshiaki; Niiyama, Kenji; Jona, Hideki; Okada, Shigemitsu; Akao, Atsushi; Hiraga, Shouichi; Tsuchiya, Yoshimi; Tomimoto, Koji; Mase, Toshiaki
CS Process Research, Process R&D, Laboratories for Technology Development, Banyu Pharmaceutical Co., Ltd., Okazaki, 444-0858, Japan
SO Chemical & Pharmaceutical Bulletin (2002), 50(8), 1066-1072
CODEN: CPBTAL; ISSN: 0009-2363
PB Pharmaceutical Society of Japan
DT Journal
LA English
OS CASREACT 138:153416
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB An asym. synthesis of a selective endothelin A receptor antagonist I (R1 = Me2CHNH; R2 = R3 = H) was developed. Asym. conjugate addn. of aryllithium derived from 6-bromo-2,3-dihydrobenzofuran to the chiral oxazoline II followed by hydrolysis afforded carboxylic acid III in 96% ee after purifn. as (S)-(-)-1-phenylethylamine salt. Pd(OAc)2/dppf (1,1'-bis(diphenylphosphino)ferrocene) catalyzed carbonylation of tert-Bu ester of III followed by chemoselective addn. of aryllithium derived from protected bromo(methoxy)benzyl alc. gave ketone IV. Subsequent diastereoselective redn. of IV with catecholborane followed by concomitant activation of the resulting alc. and cyclization gave the late intermediate I (R1 = H, R2 = 4-MeOC6H4CH2, R3 = Me3C). Introduction of amino moiety on the pyridine ring by imidoyl rearrangement followed by deprotection and purifn. by crystn. furnished the enantiomerically pure target I (R1 = Me2CHNH; R2 = R3 = H) in 8% overall yield.
IT **377091-16-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(asym. synthesis of dihydrobenzofuryl-substituted dihydrocyclopenta[b]pyridinecarboxylic acid as endothelin A receptor antagonist)
RN 377091-16-2 CAPLUS
CN 5H-Cyclopenta[b]pyridine-6-carboxylic acid, 5-(2,3-dihydro-6-benzofuranyl)-6,7-dihydro-7-[2-(hydroxymethyl)-4-methoxyphenyl]-2-[(1-methylethyl)amino]-, (5S,6R,7R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



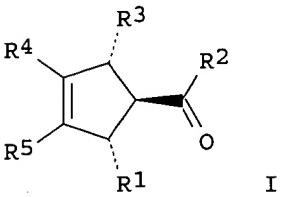


RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2003 ACS on STN
AN 2002:595530 CAPLUS
DN 137:140439
TI Asymmetric synthesis of a cyclopentapyridinecarboxylate
IN Frey, Lisa F.; Chen, Cheng Y.; Li, Jing; Song, Zhiguo J.; Tan, Lushi; Tillyer, Richard D.; Tschaen, David M.; Zhao, Matthew M.
PA USA
SO U.S. Pat. Appl. Publ., 23 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2002107391	A1	20020808	US 2001-982483	20011018
			US 2000-243171PP	20001025

OS CASREACT 137:140439; MARPAT 137:140439
GI



I

AB Title compds. [I; R1 = alk(en)yl, (un)substituted (hetero)aryl, etc.; R2 = OH, alkoxy, (un)substituted NH2; R3 = groups cited for R1, CHO, alkoxycarbonyl, etc.; R4R5 = atoms to complete an (un)substituted (heterocyclic) ring, -(hetero)arom. ring, etc.; dashed line = optional addnl. bond] were prepd. by asym. Grignard addn. to chiral OHCCR4:CR5CHR1CH2COR2 (II) followed by asym. cyclization. Thus, the Grignard prepd. from 6-bromodihydrobenzofuran was added to (R)-II (R1 = 4-methoxy-2-triphenylmethoxymethylphenyl, R2 = OCMe3, R4R5 = CH:CHC(NR6R7):N, R6 = CHMe2, R7 = CH2Ph)(prepn. given) with a diastereoselectivity of .apprx.96/4.

IT **377091-25-3P**
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(asym. synthesis of a cyclopentapyridinecarboxylate)

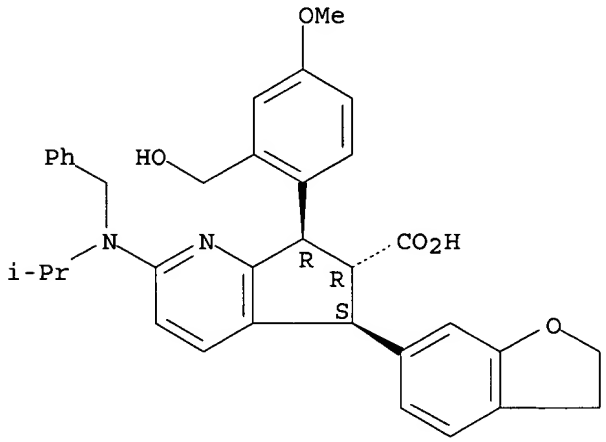
RN 377091-25-3 CAPLUS

CN 5H-Cyclopenta[b]pyridine-6-carboxylic acid, 5-(2,3-dihydro-6-benzofuranyl)-6,7-dihydro-7-[2-(hydroxymethyl)-4-methoxyphenyl]-2-[(1-methylethyl)(phenylmethyl)amino]-, (5S,6R,7R)-, compd. with benzenemethanamine (1:1) (9CI) (CA INDEX NAME)

CM 1

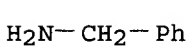
CRN 377091-24-2
CMF C35 H36 N2 O5

Absolute stereochemistry.



CM 2

CRN 100-46-9
CMF C7 H9 N



L3 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2003 ACS on STN

AN 2002:287706 CAPLUS

DN 137:279064

TI Asymmetric synthesis of a selective endothelin A receptor antagonist

AU Kato, Yoshiaki; Niiyama, Kenji; Nemoto, Takayuki; Jona, Hideki; Akao, Atsushi; Okada, Shigemitsu; Song, Zhiguo J.; Zhao, Matthew; Tsuchiya, Yoshimi; Tomimoto, Koji; Mase, Toshiaki

CS Banyu Pharmaceutical Co. Ltd, Process Research, Laboratories for Technology Development, Process R&D, Aichi, Okazaki, 444-0858, Japan

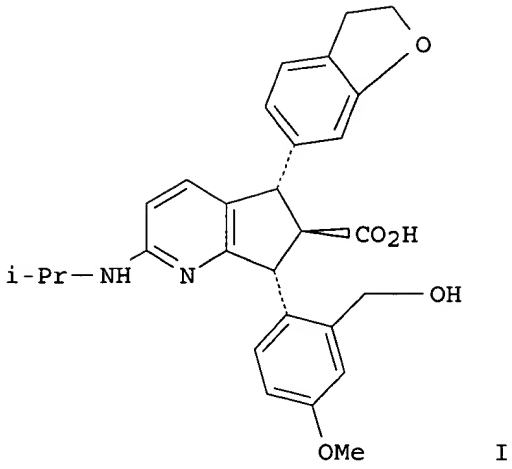
SO Tetrahedron (2002), 58(17), 3409-3415
CODEN: TETRAB; ISSN: 0040-4020

PB Elsevier Science Ltd.

DT Journal

LA English

GI



I

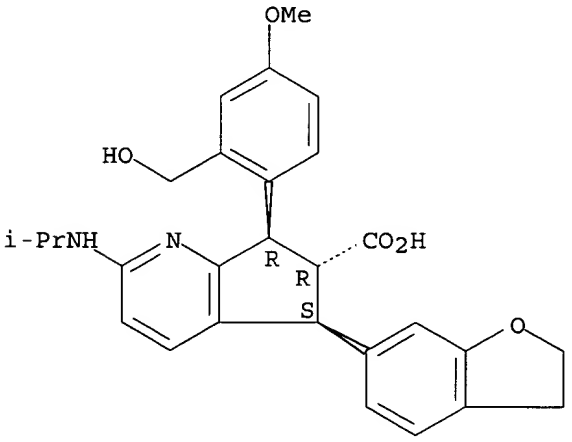
AB An asym. synthesis of a selective endothelin A receptor antagonist (I), (5S,6R,7R)-5-(2,3-dihydro-1-benzofuran-6-yl)-7-[2-(hydroxymethyl)-4-methoxyphenyl]-2-(isopropylamino)-6,7-dihydro-5H-cyclopenta[b]pyridine-6-carboxylic acid, in 10% overall yield from 2-(N-benzylisopropylamino)-6-chloro-5-formylpyridine is described.

IT **377091-16-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)

RN 377091-16-2 CAPLUS

CN 5H-Cyclopenta[b]pyridine-6-carboxylic acid, 5-(2,3-dihydro-6-benzofuranyl)-6,7-dihydro-7-[2-(hydroxymethyl)-4-methoxyphenyl]-2-[(1-methylethyl)amino]-, (5S,6R,7R)- (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2003 ACS on STN

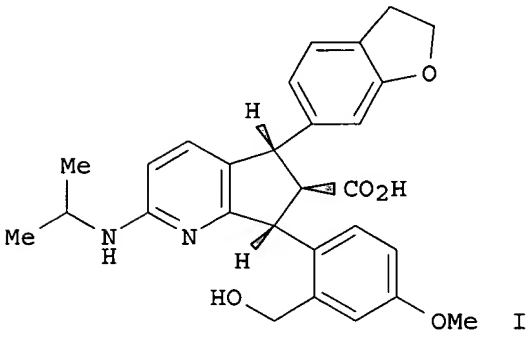
AN 2001:708409 CAPLUS

DN 136:5885

TI Practical asymmetric synthesis of a selective endothelin A receptor (ETA) antagonist

AU Song, Zhiguo J.; Zhao, Matthew; Frey, Lisa; Li, Jing; Tan, Lushi; Chen, Cheng Y.; Tschaen, David M.; Tillyer, Richard; Grabowski, Edward J. J.; Volante, Ralph; Reider, Paul J.; Kato, Yoshiaki; Okada, Shigemitsu;

Nemoto, Takayuki; Sato, Hiroki; Akao, Atsushi; Mase, Toshiaki
CS Department of Process Research, Merck Research Laboratories, Rahway, NJ, 07065, USA
SO Organic Letters (2001), 3(21), 3357-3360
CODEN: ORLEF7; ISSN: 1523-7060
PB American Chemical Society
DT Journal
LA English
OS CASREACT 136:5885
GI



I

AB A practical, chromatog.-free asym. synthesis was developed for the large scale prepn. of an endothelin receptor antagonist, diarylcyclopentapyridine I. This synthesis includes a new efficient process for the prepn. of 6-bromo-2,3-dihydrobenzofuran, a stereoselective conjugate addn. of an aryllithium followed by stereospecific addn. of the Grignard reagent of the top aryl bromide, and an aminophosphate-mediated stereospecific intramol. enolate alkylation, which led to the formation of the five-membered ring bearing three contiguous asym. centers.

IT **377091-25-3P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(asym. synthesis of (benzofuryl)(methoxyphenyl])cyclopentapyridine carboxylic acid)

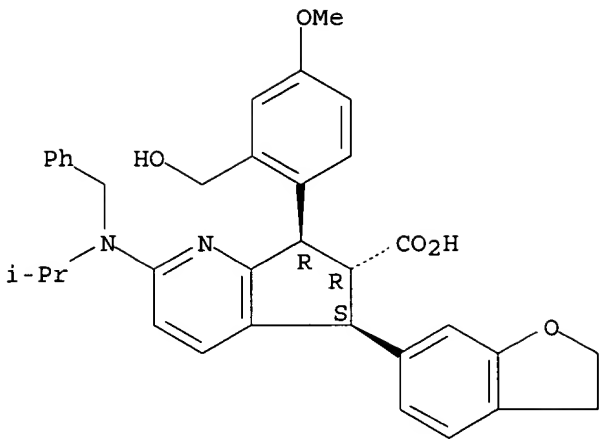
RN 377091-25-3 CAPLUS

CN 5H-Cyclopenta[b]pyridine-6-carboxylic acid, 5-(2,3-dihydro-6-benzofuranyl)-6,7-dihydro-7-[2-(hydroxymethyl)-4-methoxyphenyl]-2-[(1-methylethyl)(phenylmethyl)amino]-, (5S,6R,7R)-, compd. with benzenemethanamine (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 377091-24-2
CMF C35 H36 N2 O5

Absolute stereochemistry.



CM 2

CRN 100-46-9
CMF C7 H9 N

H_2N-CH_2-Ph

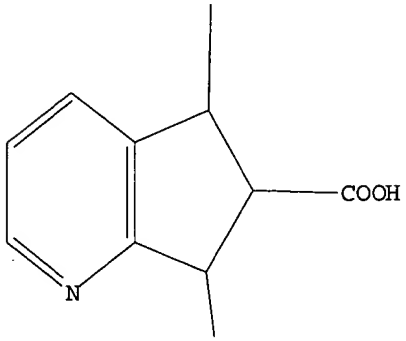
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> s l4 ful
FULL SEARCH INITIATED 16:29:00 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 2873 TO ITERATE

100.0% PROCESSED 2873 ITERATIONS 0 ANSWERS
SEARCH TIME: 00.00.01

L5 0 SEA SSS FUL L4

=> d
L5 HAS NO ANSWERS
L4 STR

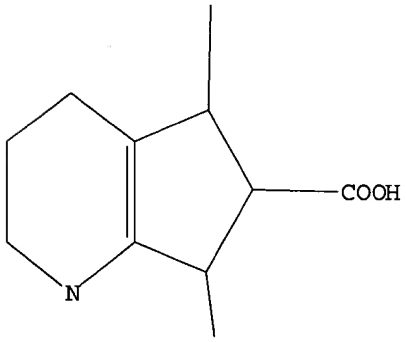


Structure attributes must be viewed using STN Express query preparation.
L5 0 SEA FILE=REGISTRY SSS FUL L4

=>
Uploading rkc483c.str

L6 STRUCTURE UPLOADED

=> d
L6 HAS NO ANSWERS
L6 STR



Structure attributes must be viewed using STN Express query preparation.

=> s l6 ful
FULL SEARCH INITIATED 16:31:41 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 6800 TO ITERATE

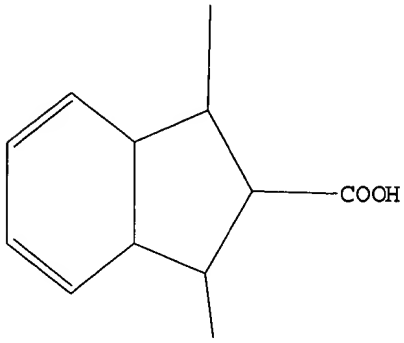
100.0% PROCESSED 6800 ITERATIONS 0 ANSWERS
SEARCH TIME: 00.00.01

L7 0 SEA SSS FUL L6

=>
Uploading rkc483d.str

L8 STRUCTURE UPLOADED

=> d
L8 HAS NO ANSWERS
L8 STR



Structure attributes must be viewed using STN Express query preparation.

=> s l8 ful
FULL SEARCH INITIATED 16:34:23 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 164 TO ITERATE

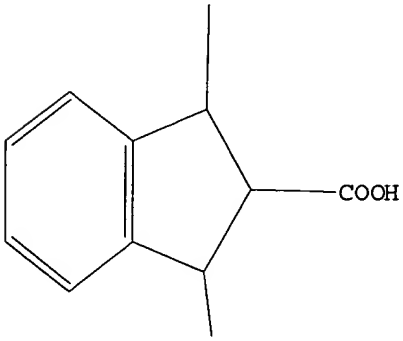
100.0% PROCESSED 164 ITERATIONS 0 ANSWERS
SEARCH TIME: 00.00.01

L9 0 SEA SSS FUL L8

=>
Uploading rkc483d.str

L10 STRUCTURE UPLOADED

=> d
L10 HAS NO ANSWERS
L10 STR



Structure attributes must be viewed using STN Express query preparation.

=> s l10 ful
FULL SEARCH INITIATED 16:35:26 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 744 TO ITERATE

100.0% PROCESSED 744 ITERATIONS 3 ANSWERS
SEARCH TIME: 00.00.01

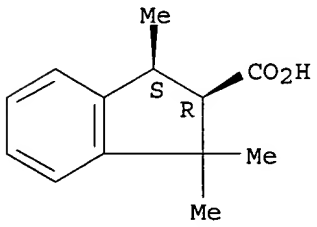
L11 3 SEA SSS FUL L10

=> d1-3
D1-3 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> d 1-3

L11 ANSWER 1 OF 3 REGISTRY COPYRIGHT 2003 ACS on STN
RN 263160-07-2 REGISTRY
CN 1H-Indene-2-carboxylic acid, 2,3-dihydro-1,1,3-trimethyl-, (2R,3S)-rel- (9CI) (CA INDEX NAME)
FS STEREOSEARCH
MF C13 H16 O2
SR CA
LC STN Files: CA, CAPLUS, CASREACT

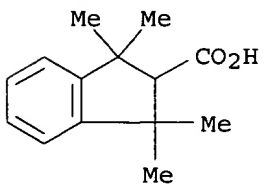
Relative stereochemistry.



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

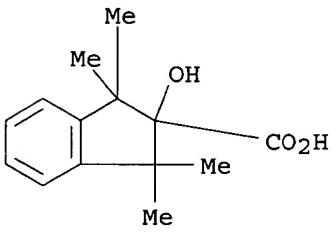
L11 ANSWER 2 OF 3 REGISTRY COPYRIGHT 2003 ACS on STN
RN 154866-44-1 REGISTRY
CN 1H-Indene-2-carboxylic acid, 2,3-dihydro-1,1,3,3-tetramethyl- (9CI) (CA INDEX NAME)
FS 3D CONCORD
MF C14 H18 O2
SR CA
LC STN Files: CA, CAPLUS



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1 REFERENCES IN FILE CA (1907 TO DATE)
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

L11 ANSWER 3 OF 3 REGISTRY COPYRIGHT 2003 ACS on STN
RN 62157-70-4 REGISTRY
CN 1H-Indene-2-carboxylic acid, 2,3-dihydro-2-hydroxy-1,1,3,3-tetramethyl- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN 2-Indancarboxylic acid, 2-hydroxy-1,1,3,3-tetramethyl- (6CI)
FS 3D CONCORD
MF C14 H18 O3
LC STN Files: BEILSTEIN*, CA, CAOLD, CAPLUS, CASREACT
(*File contains numerically searchable property data)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

3 REFERENCES IN FILE CA (1907 TO DATE)
3 REFERENCES IN FILE CAPLUS (1907 TO DATE)
2 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> fil caplus

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	602.04	785.52

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-3.26

FILE 'CAPLUS' ENTERED AT 16:35:51 ON 02 NOV 2003
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 2 Nov 2003 VOL 139 ISS 19
FILE LAST UPDATED: 31 Oct 2003 (20031031/ED)

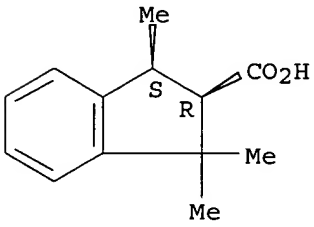
This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s l11
L12 5 L11

=> d 1-5 fbib abs fhitstr

L12 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2003 ACS on STN
AN 2000:130545 CAPLUS
DN 132:264943
TI Asymmetric hydrogenation of indenecarboxylic acids: stereochemistry of hydrogen addition
AU Borszeky, K.; Mallat, T.; Baiker, A.
CS Laboratory of Technical Chemistry, ETH-Zentrum, Zurich, CH-8092, Switz.
SO Tetrahedron: Asymmetry (1999), 10(24), 4781-4789
CODEN: TASYE3; ISSN: 0957-4166
PB Elsevier Science Ltd.
DT Journal
LA English
OS CASREACT 132:264943
AB The stereochem. of hydrogen addn. to .alpha.,.beta.-unsatd. carboxylic acids was studied by means of hydrogenation of indene carboxylic acids and their derivs. Expts. were carried out over Pd/Al2O3 in the presence and absence of cinchonidine as a chiral modifier. In all cases, hydrogenation occurred via bottom side syn addn. of two hydrogen atoms to the chemisorbed substrate. Formation of trans isomers, up to 72%, was obsd. due to C:C bond isomerization in the substrate, and to adsorption and hydrogenation of the unsatd. mol. in a sterically unfavorable position. Adsorption in "upside down" position was promoted by N-bases. Hydrogenation of 3-methylindene-2-carboxylic acid provided up to 45% ee. Due to the high activity of Pd in C:C bond migration, a good ee can be achieved only when isomerization is negligible.
IT **263160-07-2P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(asym. hydrogenation of indenecarboxylic acids)
RN 263160-07-2 CAPLUS
CN 1H-Indene-2-carboxylic acid, 2,3-dihydro-1,1,3-trimethyl-, (2R,3S)-rel- (9CI) (CA INDEX NAME)

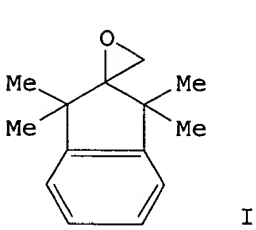
Relative stereochemistry.



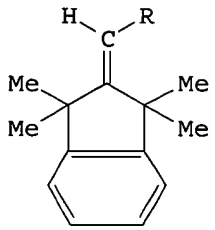
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2003 ACS on STN
AN 1994:298208 CAPLUS
DN 120:298208
TI Sterically congested molecules. 9. 1,1,3,3-Tetramethyl-2-methyleneindan derivatives: syntheses with imminent rearrangement
AU Knorr, Rudolf; Freudenreich, Johannes; von Roman, Therese; Mehlstaeubl, Johann; Boehrer, Petra
CS Inst. Org. Chem., Univ. Muenchen, Munich, D-80333, Germany

SO Tetrahedron (1993), 49(39), 8837-54
CODEN: TETRAB; ISSN: 0040-4020
DT Journal
LA English
OS CASREACT 120:298208
GI



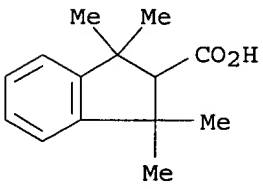
I



II

AB The syntheses of 2,2,3,3-tetramethyl1-indanylidene and of 1,1,3,3-tetramethyl-2-indanylidene derivs. from 1,1,3,3-tetramethyl-2-indanone are reported. Access to the second series is restricted by the ease of Me migration under carbenium-like conditions, such as electrophilic bromination. The rearrangement products are described and also the methods avoiding their formation. Nucleophilic bromination of the oxirane I allows to efficiently prep. the sterically shielded bromoalkene II (R = Br) or the enol acetate II (R = OAc) and other key compds. for further transformations.

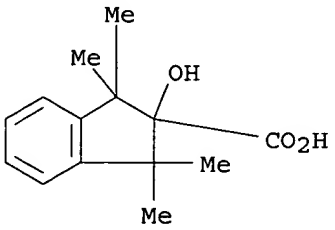
IT **154866-44-1P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn., sterically congested mols., 1,1,3,3-tetramethyl-2-methyleneindan derivs., syntheses with imminent rearrangement)
RN 154866-44-1 CAPLUS
CN 1H-Indene-2-carboxylic acid, 2,3-dihydro-1,1,3,3-tetramethyl- (9CI) (CA INDEX NAME)



L12 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2003 ACS on STN
AN 1977:105469 CAPLUS
DN 86:105469
TI The photochemical reaction of 1,1,4,4-tetramethyl-2,3-tetralindione with hydrogen donors
AU Maruyama, Kazuhiro; Takahashi, Tomoji
CS Fac. Sci., Kyoto Univ., Kyoto, Japan
SO Bulletin of the Chemical Society of Japan (1976), 49(11), 3132-6
CODEN: BCSJA8; ISSN: 0009-2673
DT Journal
LA English
AB The photochem. reaction of 1,1,4,4-tetramethyl-2,3-tetralindione (I) with H donors, such as xanthene and aldehydes, in the liq. phase was investigated. When xanthene was selected as the H donor, the main products were the 1,2-adduct, photo-reduced .alpha.-keto alc., and 9,9'-bixathenyl. The photolysis of I and an aldehyde gave a mixt. of the 1,2-adduct and the 1,4-adduct. However, in the reaction with

isobutyraldehyde another type of 1,2-adduct was obtained, i.e., a combination product between the semidione radical and the isopropyl radical resulting from the decarbonylation of the isobutyryl radical, together with propene and CO. The usual type of 1,2-adduct, the 1,4-adduct, and the photo-reduced product (.alpha.-keto alc.) were the minor products in the reaction. The original 1,4-adduct obtained from I and AcH rearranged photochem. to a different type of 1,2-adduct, but no reverse rearrangement was obsd. The mechanism of the reactions were discussed on the basis of product anal. and the examn. of the reaction by means of CIDNP.

IT **62157-70-4P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of)
RN 62157-70-4 CAPLUS
CN 1H-Indene-2-carboxylic acid, 2,3-dihydro-2-hydroxy-1,1,3,3-tetramethyl- (9CI) (CA INDEX NAME)

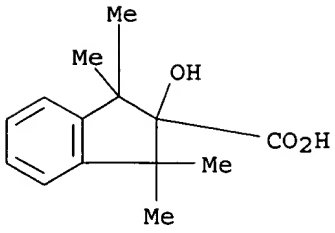


L12 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2003 ACS on STN
AN 1959:28990 CAPLUS
DN 53:28990
OREF 53:5222h-i,5223a
TI Aromatic ketones
IN Bruson, Herman A.; Grant, Fredrick W.; Bobko, Edward
PA Olin Mathieson Corp.
DT Patent
LA Unavailable
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2857433		19581021	US	

AB 2,2,5,5-Tetramethyltetrahydrofuranone (I) (1 mole) in 500 ml. dry C6H6 was treated with 1.7 moles anhyd. AlCl3 at 40-50.degree. and the soln. refluxed (75-80.degree.) 4 hrs. The cooled soln. was then poured into 1 l. of ice and water contg. 100 ml. concd. HCl and worked up with ether to give a dark sirup. This material taken up in twice its vol. of petr. ether (b. 30-60.degree.) gave 22 g. yellow cryst. product plus 35.4 g. of product from a Vigreux column distn., or a total of 57.4 g. 1,1,4,4-tetramethyltetrahydronaphthalenone (II), m. 75.degree.. Similarly, 2-hydroxy-2,5-dimethyl-5-phenyl-3-hexanone gives a product which reacts with AlCl3 to give II. A soln. of 0.28 mole I and 2 moles p-xylene was stirred 1.5 hrs. at 10-15.degree. as 0.58 mole AlCl3 was added. The mixt. was stirred 5.5 hrs. at 20-30.degree., left at room temp. overnight, and warmed 1.5 hrs. at 55-60.degree.. The cooled soln. was poured into concd. HCl and worked up to give 78% isomeric condensates of p-xylene and I.

IT **62157-70-4**, 2-Indancarboxylic acid, 2-hydroxy-1,1,3,3-tetramethyl-
(prepn. of)
RN 62157-70-4 CAPLUS
CN 1H-Indene-2-carboxylic acid, 2,3-dihydro-2-hydroxy-1,1,3,3-tetramethyl- (9CI) (CA INDEX NAME)



L12 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2003 ACS on STN
AN 1959:11854 CAPLUS
DN 53:11854
OREF 53:2248a-i,2249a-c
TI Sterically blocked ketones, alcohols, and acids
AU Bruson, Herman A.; Grant, Fred W.; Bobko, Edward
CS Olin Mathieson Chem. Corp., New Haven, CT
SO Journal of the American Chemical Society (1958), 80, 3633-6
CODEN: JACSAT; ISSN: 0002-7863
DT Journal
LA Unavailable
GI For diagram(s), see printed CA Issue.
AB [Me2C(OH)C.tplbond.]2 (700 g.), 35 g. Hg(OAc)2, and 35 cc. concd. H2SO4 in 3500 cc. H2O heated to 80.degree. and treated cautiously with steam until no more oil sepd., and the oily layer of the steam distillate dried and distd. gave 665 g. 2,2,5,5-tetramethyltetrahydrofuranone (I), b93-96 80-2.degree.. I (128 g.) in 500 cc. dry C6H6 treated gradually at 40-50.degree. with 226 g. powd. AlCl3, refluxed 4 hrs., cooled, poured onto 1 l. ice and H2O contg. 100 cc. concd. HCl, and dild. with 200 cc. Et2O, the aq. layer washed with Et2O, the combined Et2O layer and washing washed, dried, and evapd., and the residual dark sirup crystd. from petr. ether at -15.degree. gave 22 g. crude 1,1,4,4-tetramethyl deriv. of 2-tetralone (II); the mother liquor evapd. and distd. yielded 7 g. light yellow distillate, b0.5-1.0 41-92.degree., 46 g. yellow sirup, b0.5-1.0 92-6.degree., and 23 g. orange-yellow sirup, b0.5-1.0 96-100.degree., and left 45 g. tar.; fractions 2 and 3 dissolved separately in 2 vol. petr. ether and kept at -15.degree. yielded 20.7 and 14.7 g. II, resp.; the combined crude product recrystd. from petr. ether with C gave pure II, m. 75.degree.. EtOH (20 cc.), 4 g. KOH, 1 g. NH2OH.HCl, and 1 g. II refluxed 2.5 hrs., cooled, and poured into cold H2O yielded 1 g. oxime (III) of II, m. 191-3.degree. (EtOH). III (4 g.) and 140 g. polyphosphoric acid heated 20 min. with stirring at 140.degree., cooled, poured into H2O, and extd. with Et2O, the ext. worked up, and the residual sirup crystd. from petr. ether yielded 1.0 g. IV, m. 144-5.degree.. EtOH (50 cc.), 1 cc. AcOH, 3 g. 85% N2H4.H2O, and 5 g. II refluxed 72 hrs. and cooled gave 0.8 g. azine, m. 171-2.degree.; the filtrate concd. and the deposit (1.8 g.) recrystd. from EtOH yielded the hydrazone (V) of II, m. 117-18.degree.. V (1.6 g.) and 0.16 g. powd. KOH heated 5 hrs. at 200-50.degree., cooled, and dild. with H2O and Et2O, the Et2O layer worked up, and the residual oil chromatographed on Al2O3 yielded 1,1,4,4-tetramethyl-1,2,3,4-tetrahydronaphthalene. II (12.6 g.) and 6.3 g. 5% Pd-C heated 92 hrs. at 350.degree., cooled, dissolved in Et2O, filtered, and evapd., and the residual sirup crystd. from MeOH at -10.degree. gave unchanged II; the mother liquor treated with satd. picric acid in MeOH and the resulting crude, cryst. picrate decompd. on Al2O3 yielded 0.2 g. 1,2,3,4-tetramethylnaphthalene, m. 105-6.degree. (MeOH); picrate, m. 178-80.degree. (MeOH). II (1 g.) in dry Et2O added with stirring to 1 g. LiAlH4 in dry Et2O, refluxed 0.5 hr., decompd. with MeOH and H2O, and worked up in the usual manner yielded 1,1,4,4-tetramethyl-1,2,3,4-tetrahydro-2-naphthol, m. 86-7.degree. (EtOH). II (3.3 g.), 255 cc. H2O, 13 g. KMnO4, and 0.5 g. KOH refluxed 3 hrs. with stirring, acidified with dil. H2SO4, and decolorized with NaHSO3 yielded 2.5 g. 2-hydroxy-1,1,3,3-tetramethylindan-2-carboxylic acid (VI), m.

188-9.degree. (C6H6). VI (1 g.), 20 cc. 25% aq. AcOH, and 2 g. CrO3 kept 4 hrs. at room temp. (CO2 was evolved), and dild. with H2O and Et2O, the Et2O layer worked up, and the residue dissolved in MeOH. dild. with H2O to turbidity, and allowed to stand gave 90% 1,1,3,3-tetramethylindan-2-one, m. 76-7.degree. (aq. MeOH). II (4.5 g.), 400 cc. H2O, 40 g. MgSO4, and 18 g. KMnO4 refluxed 40 hrs. with stirring, the pptd. MnO2 dissolved with NaHSO3, the soln. acidified with H2SO4 and extd. with Et2O, the ext. reextd. with aq. NaHCO3, and the aq. ext. acidified, concd. under an air jet, and filtered yielded 84% .omicron.-C6H4(CMe2CO2H)2, m. 181-3.degree.. AlCl3 (114 g.) added gradually during 0.5 hr. with stirring to 40.5 g. I and 250 cc. dry C6H6 at 30-40.degree., stirred 20 hrs. at 40.degree., cooled, and poured into 1 l. ice and H2O, the C6H6 layer worked up to yield 55 g. dark reddish sirup, and a 4.7-g. aliquot chromatographed on Al2O3 yielded 1.2 g. Me2PhCH2COC(OH)Me2 (VII), b0.3 86-7.degree., n25D 1.5073. CrO3 (5 g.), 5 cc. H2O, 50 g. glacial AcOH, and 2 g. VII kept 20 hrs. at room temp., treated with MeOH, poured into H2O, and extd. with Et2O, the ext. evapd., and the residual sirupy acid purified through the cyclohexylamine salt, m. 166-7.degree., yielded 90% pure Me2PhCCH2CO2H (VIII), m. 56-7.degree.. Chloro-tert-butylbenzene (30 g.) in 100 cc. dry Et2O treated with 4.3 g. Mg, and the mixt. treated with powd. CO2, and worked up in the usual manner gave VIII, m. 56-7.degree.. VII (11 g.) and 200 cc. CS2 treated gradually at 10.degree. with 13.3 g. AlCl3, refluxed 4 hrs., cooled, and decompd. with iced H2O, the CS2 layer evapd. to leave 10.2 g. oil, and a 2.2g. portion chromatographed on Al2O3 yielded 0.2 g. II. AlCl3 (333 g.) added in portions with stirring to 142 g. I in 500 cc. dry C6H6 at 40-50.degree., refluxed 4 hrs., cooled, poured into iced H2O, and extd. with Et2O, and the ext. worked up gave the following fractions: (1) b1 82-96.degree., 15 g.; (2) b1 96-103.degree., 52 g.; (3) b1 103-5.degree., 49 g.; (4) b1 105-12.degree., 5 g.; (5) residual tar, 23 g. Fraction 4 kept 24 hrs. at -15.degree. deposited 1.4 g. II. Fraction 2 redistd. gave 1-acetyl-1,3,3-trimethylindan (IX), b1 99-101.degree.. Fraction 2 contained a considerable amt. of IX. IX (10 g.), 50 g. KMnO4 in 800 cc. H2O, and 1 g. NaOH refluxed 20 hrs., cooled, treated with NaHSO3, filtered, acidified with H2SO4, and filtered and the residue (1.0 g.) recrystd. from petr. ether gave a tertiary monocarboxylic acid, C13H16O2, m. 131-2.degree. (petr. ether). IX (1 g.) reduced with 1 g. LiAlH4 in dry Et2O to the corresponding carbinol, C14H20O, m. 76-7.degree.. Concd. H2SO4, BF3, Et2O.BF3, SnCl4, and polyphosphoric were completely ineffective in place of the AlCl3 in the synthesis of the ketones.

IT **62157-70-4**, 2-Indancarboxylic acid, 2-hydroxy-1,1,3,3-tetramethyl- (prepn. of)

RN 62157-70-4 CAPLUS

CN 1H-Indene-2-carboxylic acid, 2,3-dihydro-2-hydroxy-1,1,3,3-tetramethyl- (9CI) (CA INDEX NAME)